

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/DK2005/000221

International filing date (day/month/year)  
31.03.2005

Priority date (day/month/year)  
31.03.2004

International Patent Classification (IPC) or both national classification and IPC  
G01B9/02, G01N29/24, G02B26/00, G01N29/04, G01N29/12

Applicant  
FORCE TECHNOLOGY

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. IV Lack of unity of invention**

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1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☒ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
  - ☐ the parts relating to claims Nos.

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	2-5,7,10,11,15-21,23,25-29
	No: Claims	1,6,8,9,12-14,22,24,30-32
Inventive step (IS)	Yes: Claims	2-5,7,10,11,15-21,23,25-29
	No: Claims	1,6,8,9,12-14,22,24,30-32
Industrial applicability (IA)	Yes: Claims	1-32
	No: Claims	

2. Citations and explanations

**see separate sheet**

**WRITTEN OPINION OF THE  
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**Re Item IV.**

The separate inventions/groups of inventions are:

- |             |   |
|-------------|---|
| 1-11,22-29  | Method and device for detecting a property of an object in which the output signal is generated as a ratio of a signal derived from the interferometric reflection and transmission signals |
| 12-21,30-32 | Method and apparatus for controlling the resonant frequency of an optical interferometer  |

They are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

- 1 The only concept in common to all the independent claims, namely a method (and apparatus suitable for carrying out said method) of detecting a property of an object using laser interferometry, is well known in the art. See e.g. US 5 137 361.
- 2 The claims can be grouped according to their special technical features:
  - 2.1 Claims 1-11 and 22-29: Method and device for detecting a property of an object in which the output signal is generated as a ratio of a signal derived from the interferometric reflection and transmission signals, thus solving the objective problem of how to increase the signal to noise ratio of the output signal.
  - 2.2 Claims 12-21 and 30-32: Method and apparatus for controlling the resonant frequency of an optical interferometer, thus solving the objective problem of how to optimise the interferometer to the sample being analysed.
- 3 There is no feature in common to the two groups, which could be considered as a special technical feature in the sense of PCT Rule 13.2, second sentence. Thus no technical relationship, within the meaning of PCT Rule 13.2, can be seen between the aforementioned groups of inventions.
- 4 Hence it appears that the claims do not satisfy the requirements of unity of invention

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in the sense of PCT Rule 13. The above groups of inventions are, individually, considered to meet the requirements of unity. If the applicant pays additional fees for one (or more) not yet searched group(s) of invention(s), then the further search(es) may reveal further prior art that gives evidence of a further lack of unity 'a posteriori' within one (or more) of the not yet searched group(s). In such a case only the first invention in this (each of these) group(s) of inventions, which is considered to lack unity of invention, will be the subject of a search. No further invitation to pay further additional fees will be issued. This is because Article 17(3)(a) PCT stipulates that the ISA shall establish the International Search Report on those parts of the international application which relate to the invention first mentioned in the claims ('main invention') and for those parts which relate to inventions in respect of which the additional fees were paid. Neither the PCT nor the PCT guidelines provide a legal basis for further invitations to pay further additional search fees (W17/00, point 11 and W1/97, points 11-16).

**Re Item V (Claims 1-11,22-29).**

- 1 Reference is made to the following document:

D1 : US 6 633 384 B1 (DRAKE JR THOMAS E ET AL) 14 October 2003 (2003-10-14)

- 2 Document D1 discloses (the references in parentheses applying to this document) a method and apparatus for detecting a property of an object using laser interferometry in which the output signal is generated as a ratio of a signal derived from the interferometric transmission signal and a signal derived from the interferometric reflection signal (e.g. col. 5, lines 21-45 and claims 1-5).

2.1 INDEPENDENT CLAIMS 1 and 22

As can be seen from the above, document D1 discloses in combination all the features defined in independent claims 1 and 22. Hence the subject-matter of these claims is not new (Article 33(2) PCT).

3 DEPENDENT CLAIMS 6, 8, 9, 24

Dependent claims 6, 8, 9, 24 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

4 DEPENDENT CLAIMS 2-5, 7, 10, 11, 23, 25-29

The combination of the features of dependent claims 2-5, 7, 10, 11, 23, 25-29 are neither known from, nor rendered obvious by, the available prior art.

**Re Item V (Claims 12-21,30-32).**

- 1 Reference is made to the following document:

D2: DE 40 24 977 A1 (LEONHARDT, KLAUS, PROF. DR., 7257 DITZINGEN, DE) 13 February 1992  
(1992-02-13)

- 2 Document D2 discloses (the references in parentheses applying to this document) a method and apparatus for controlling the resonant frequency of an optical interferometer in which the control signal is generated as a ratio of first and second signals derived from the interferometric transmission signal and the interferometric reflection signal (e.g. col. 2, line 5 - col. 3, line 18 in combination with figure 1).

2.1 INDEPENDENT CLAIMS 12 and 30

As can be seen from the above, document D2 discloses in combination all the features defined in independent claims 1 and 22. Hence the subject-matter of these claims is not new (Article 33(2) PCT).

3 DEPENDENT CLAIMS 13, 14, 31, 32

Dependent claims 13, 14, 31, 32 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

4 DEPENDENT CLAIMS 15-21

The combination of the features of dependent claims 15-21 are neither known from, nor rendered obvious by, the available prior art.